Pop-up Bike Lane
Asbury Park, New Jersey

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Rutgers
Edward J. Bloustein School of Planning and Public Policy
Acknowledgement

The Studio Team would like to thank

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- James Bonanno & Mike Manzella
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Agenda of the Presentation

• Introduction
• Background
• Demonstration Project Process
• Bike Lane Launch
• Survey
• Lessons Learned
• Recommendations
• Technology and Evaluation
Introduction
To encourage micromobility use in Asbury Park by improving the user safety and comfort

**Goal**

**Objectives**

1. Design and **install** a safe **pop-up bike lane**
2. Obtain **public feedback**
3. Create **recommendations**
Methodology

- Explored micromobility infrastructure options
- Proposed bicycle and scooter lane design
- Developed a survey for feedback
- Contributed to research funded by the National Science Foundation (NSF)
Background
About Micromobility

Small, low-speed, lightweight, human or electric powered transportation devices

- Fills in gaps in the transportation network
- Replaces short car trips
- Expands access for the low-income community
About Asbury Park

Total population: 15,188 (2020)

Size: 1.6 sq. miles
Demographics: 2019 Median age (years)

- Asbury Park: 37 years
- Monmouth County: 43 years
- New Jersey: 40 years
### Demographics: 2019 Median Household Income

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<thead>
<tr>
<th>Location</th>
<th>Median Household Income</th>
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<td>Asbury Park</td>
<td>$47,841</td>
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<td>Monmouth County</td>
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<tr>
<td>New Jersey</td>
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Demographics: Percentage of population living below the federal poverty line (2019)

- Asbury Park: 26%
- Monmouth County: 7%
- New Jersey: 10%
Demographics: 2019 Average life expectancy (years)

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<th>Asbury Park</th>
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## Percentage of Households without Access to a Car (2019)

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<th>Location</th>
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<td>Asbury Park</td>
<td>20%</td>
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<td>Monmouth County</td>
<td>7%</td>
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<tr>
<td>New Jersey</td>
<td>11%</td>
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Percentage of population that walks or bikes to work (2019)

- Asbury Park: 2.0% Walk to work, 5.5% Bike to work
- Monmouth County: 1.5% Walk to work, 0.5% Bike to work
- New Jersey: 2.7% Walk to work, 0.3% Bike to work
Local Micromobility Regulations

Local laws:

- 18+ years old
- No carrying parcels
- Both hands on handlebars
- Park in designated areas
Current Scooter Share: Superpedestrian

- Launched in May 2021
- 250 e-scooters and 50 geofenced parking corrals
- Discounts on rides and helmets for underserved communities
Asbury Park Bike Plan

- **Ocean Avenue** - Busy beachfront road
- **Kingsley Street** - High traffic volumes
- **Cookman Avenue** - Connectivity potential
Process
Why do a Demonstration Project?

To see if it works…

…and to show how it can improve Asbury Park’s streets and connectivity.
Process Timeline

1. Why a Demonstration Project?
2. Initial Client Proposals February
3. Feedback from Client and Council Approval
4. First Revision of Proposal March
5. Final Proposal March
6. Listing and Budgeting Demonstration Materials April
Initial Proposal for Bike Lane

- Cookman Ave
- Asbury Ave
- Ocean Ave (till 7th Ave)
First Revision of the Proposal

- Cookman Ave
- Asbury Ave
- Ocean Ave (till 4th Ave)
Final Demonstration Bike Lane Proposal

Cookman Ave and Asbury Ave
Initial Client Proposal – Ocean Ave

Bike lane with protected buffer was provided between the angled parking lane and the sidewalk.

Sources: StreetMix
Cookman Ave. Demonstration Bike Lane Proposal

Bike lane with protected buffer provided on both sides

Existing

Proposed

Sources: StreetMix
Design of Cookman Ave. Demonstration Bike Lane Proposal
Proposal for bike lane around bus stop

Bus stops on Cookman Ave

• Buses stop against the curb for ADA compliance
• Markings to inform bikers about the bus stop
Existing Site Condition of Intersection

Safety Concerns

- Larger turning radii
- Bike lanes connections
Final proposal for intersection

Cookman Ave and Asbury Ave Intersection

• Corner island to improve safety for bike lane
• Also separates motor vehicle and riders
Alternative for intersection

Advantages

- Increased visibility
- Less resources
Asbury Ave. Demonstration Bike Lane Proposal

Existing

Proposed

Sources: StreetMix
Design of Asbury Ave. Demonstration Bike Lane Proposal
Demonstration Material

Material borrowed:

- Two field line striping machines
- Traffic cones
- Sidewalk chalk
- Measuring tape
- Corrugated plastic signs

Materials purchased:

- Bike lane stencil
- Temporary Chalk Spray
  - Green: 10 cans
  - Yellow: 3 cans
  - White: 10 cans

The total cost of materials purchased: $212.58
Bike Lane Launch
Installation Day
Planning the day’s work (left) and measuring out and marking where the bike and scooter lane would be striped (right)
Striping the bike and scooter lane
The field line stripers in action
Spray-chalking the bike stencil
Bike lane completed (left) and first cyclist to use it! (right).
Duration of Study

Team members getting feedbacks from cyclists & pedestrians
Survey
Survey Development

The Studio Team collaborated with professors and researchers to finalize survey questions.

It was important to create questions that captured key data without making the survey too long.

Both electronic and hard copy versions were created and distributed.

The survey was distributed through:

- **Email outreach to organizations**
- **Social media posts**
- **In person**
Community Outreach

● Social media accounts affiliated with the city
● AP Complete Streets Coalition & EZ Ride
● City of Asbury Park’s facebook, Instagram, twitter, and nextdoor accounts
Mostly full-time residents
Half men; half women
55% used pop-up lane

Survey Results

Question 1: Did you use the temporary bicycle & scooter lanes along Cookman and Asbury Avenues?

- 31 (45%) Yes, rode a bicycle or e-bicycle
- 12 (17%) Yes, rode an e-scooter
- 26 (38%) No, did not use the lane

Total Respondents = 69
Survey Results

- Walking/biking very common
- Lower levels of driving
- 6% used “other” mode

Question 4a: How are you primarily getting around in Asbury Park?

Total Respondents = 31
Question 8: Rate the safety of the bicycle and scooter lane on a scale from zero to ten.

Survey Results

- Average safety rating of 7.5
- ~90% support making lane permanent
- Many riders felt threatened by vehicles

Note: no respondent selected a rating of four.

Total Respondents = 58
Survey Results

Open Comments:

- Thanks for putting in a bike lane. We need them!
- With high tourism it has become increasingly more dangerous for bike riders. It is very important we have the bike lanes.
- A really good idea to enhance the safety of the community.
- Would love it if they were protected bike lanes. Paint them green, and permanent. If not protected, make them green lanes.
- Thank you for doing this! We need more bike lanes and bike share in Asbury Park.
Survey Results

Open Comments:

Please keep the bike path. It keeps the pedestrians shopping and dining outdoors safe as well as the bicycle riders. It’s yet another activity beach people love to enjoy that will give Asbury another leg up!

I feel these should be all over Asbury Park to make our city residents and visitors feel comfortable and confident to get around via bike.
Survey Results

Open Comments:

I would be concerned sharing a lane with people on e-scooters because they usually don’t follow traffic rules (i.e. they ride on sidewalks or wrong way on one-way streets).

The bike lanes will create a major traffic jam on Cookman approaching Kingsley. The overflow of traffic will end up on residential streets...people ride in any askew direction and on sidewalks, so why inconvenience others with a bike lane that will go unused like all the others[?]
Lessons Learned
Lessons Learned

- Virtual simulation has major limitations
- Utility in urban planning is unclear
- “Smaller can be better” when installing pop-up lanes
Recommendations
Bike Lane Visibility

**Issue**-
- Riders use the road

**Action**-
- Painted Green Bike Lane
- Fill lane with abstract art
- Increase barrier visibility
- Increase sharrow size
Cookman Ave. and Asbury Ave. Intersection

Issue-
- Right turn on red
- Traffic light visibility

Action-
- “NO RIGHT ON RED” signage
- Backplates with retroreflective borders
Cookman Ave. and Asbury Ave. Intersection - Barriers

Issue-
- Delineators need to be present

Action-
- Make delineators present
- Cars sweep through intersection
Left turn from Kingsley St. onto Asbury Ave.

**Issue-**
- Unsafe feeling through intersection

**Action-**
- Bike Boxes
- Pedestrian/Rider Scramble
- Leading pedestrian interval
Crosswalks

**Issue:**
- Crosswalks are of low visibility

**Action:**
- High visibility crosswalks at intersections
- R1-6 road sign 150 feet from crosswalks
- Enhanced lighting at crosswalks
Lack of Awareness

**Issue** -
- Knowledge of the Bike Lane

**Action** -
- More promotion
People without experience need education

**Issue**-
- Educating beginners

**Action**-
- Partner with EZ Ride and LINK
Programs to support roadway safety and equity

**Issue:**
- Vehicle/pedestrian road share

**Action:**
- Explore Vision Zero Action Plan
- Update Complete Streets Policy
Technology and Evaluation
Making Micromobility Smarter & Safer

• **Biometric Sensor Feedback**
  • Eye-tracking Glasses: Attention Sensors
  • Galvanic Skin Response: Stress Sensors

• **Computer Vision Technology**
  • Near-miss Detection
Eye-Tracking Software

User wears a light-weight eye-glass with built-in cameras that is attached to a recording device.

The cameras capture the user's pupil dilation and determine the user's focus.

Records the level of focus the user has on various objects (example: roads, vehicles, pedestrians etc.).

Recordings are examined to obtain the results.
Galvanic Skin Response

User wears a light-weight GSR sensor on the non-dominant hand to record stress level data.

Sensor measures skin sweat gland activity.

Records level of stress based on measured activities.

Stress levels are synchronized with eye-tracking data to understand the impact of the perception of built environment objects on user stress levels.

Example of output. Peak is where rider almost fell off their e-scooter:
Virtual Reality

User wears the virtual reality headset (HTC Vive)

User operates the stationed e-scooter (ie., controls acceleration and brakes)

Tests various features of the model (example: interaction with vehicles, pedestrians, irregular surfaces, various speeds etc.)

The model records and measures the user behavior with various features
Thoughts on Technology

- Difficult to simulate driver habits and characteristics in a virtual environment.
- Beneficial for modeling potential changes in the built environment.
- Limited mobility of the 3D headset.
- Users may experience “digital-sickness.”
- Scope for advanced research to see possible implementation of VR technology in Urban Planning.